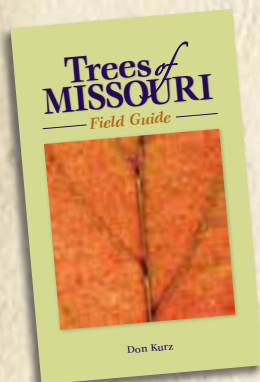


A close-up photograph of a plant, likely a species of grass or sedge, featuring green stems and clusters of orange and red seed pods or flower parts. The background is a solid green color.

MISSOURI CONSERVATIONIST

VOLUME 78, ISSUE 8, AUGUST 2017
SERVING NATURE & YOU

80TH ANNIVERSARY OPEN HOUSES



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AT THE FOLLOWING OPEN HOUSES:

AUG. 8

Cape Girardeau
Conservation Nature Center
2289 County Park Drive
in Cape Girardeau

AUG. 10

Runge Conservation
Nature Center
330 Commerce Drive
in Jefferson City

AUG. 14

Northeast Regional Office
3500 S. Baltimore
in Kirksville

SEPT. 7

Powder Valley
Conservation Nature Center
11715 Cragwold Road
in Kirkwood

SEPT. 26

Leah Spratt 101
(Kemper Recital Hall)
Missouri Western State University
4525 Downs Drive in St. Joseph

OCT. 10

Springfield Conservation
Nature Center
4601 S. Nature Center Way
in Springfield

OCT. 12

Twin Pines Conservation
Education Center
20086 Highway 60 in Winona

OCT. 26

Anita B. Gorman
Conservation
Discovery Center
4750 Troost Ave in Kansas City

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Sedge wren



MISSOURI CONSERVATIONIST



ON THE COVER

Eastern gamagrass is in full bloom on a prairie in New Bloomfield.

NOPPADOL PAOTHONG

180mm macro lens, f/5.6
1/200 sec, ISO 400

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Letters to the Editor

Submissions reflect readers' opinions and may be edited for length and clarity. Email Magazine@mdc.mo.gov or write to us:

MISSOURI
CONSERVATIONIST
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BOW BUILDERS

My sons and nieces were looking for something to do when I thought of the *Bow Builders* article in the June issue [Page 24]. We constructed four PVC bows. The kids had a great time and want to shoot them again.

John Hare Gladstone

MORE BOW BUILDERS

I enjoyed the June article *Bow Builders* by Darren Haverstick on making archery equipment from PVC pipe. My two grandchildren and I made bows and have really had a lot of fun using them. The article and illustrations were excellent and very easy to follow. It was an enjoyable early summer project to complete with them.

Larry W. Nelson Warsaw

BEAR AWARE

I was so impressed by the diagram on Page 21 [May, *Be Bear Aware*] of the campsite, I thought I'd let you know what a valuable piece of information you have there. A lot of people, myself included, can read "place your tent upwind and 100 yards away," but that doesn't mean much. I don't have the best sense of direction either. That diagram really made an impression in my mind, and I think you should put it on signs, billboards, pamphlets, on your website, anywhere you can so a lot of people see it. I'm glad I did! Thanks for a great magazine and all the great work you do in our state.

Karen Brown via email

NATURE KNIGHTS

Your item in the June issue brought me many memories of Nature Knights [Letters, Page 2]. I was a teacher from 1943 to 1945 at Nolan School, District 25 in Monroe County, Missouri. We participated in the Nature Knights program. We would go on walks through the woods surrounding the school yard and observe caterpillars in the chrysalis on a weed stalk. Some weeds were cut and developed into butterflies.

Hilda Ruth Wilson Monroe City



MUSSELS

I really enjoyed your story on freshwater mussels in the June magazine [*Missouri's Essential Freshwater Mussels*, Page 16]. It has been many many years since I was on a Boy Scout survivor hike and mussels were the only thing we could find/catch. If I remember correctly, they were not very tasty and not easy to swallow. I was curious if MDC had a method to cook them. I looked for a catch and possession limit and did not find that either. Is it legal to take and possess Missouri mussels?

Bob Hentges Jefferson City

We did not include a recipe for preparing mussels, mainly because there were so many cool things about mussels we wanted to tell our readers and ran out of space. There isn't a good recipe that we know of. Your description of "not very tasty and not easy to swallow" matches just about every description of eating freshwater mussels we've heard of! According to the Wildlife Code of Missouri, there is a daily limit of five in the aggregate, and limits apply to live and dead animals. Two shell halves or valves count as one mussel or clam. Asian clams may be taken and possessed in any number. These animals may be taken by hand, hand net, or pole and line throughout the year, and mussels and clams taken may be used as bait. These rules do not apply, however, to endangered species or species of conservation concern. —THE EDITORS

MUSSELS: CLIFF WHITE

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Have a Question for a Commissioner?

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Want to see your photos in the Missouri Conservationist?

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or include the hashtag #mdcdiscovernature
on your Instagram photos.



1

1 | Black-crowned night-heron by **Kevin Wilson**, via Flickr

2 | Jack and Lucy explore nature by **teakphillips**, via Instagram

3 | White-tailed deer by **Alan Shaw**, via email



2



3

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Up Front

with Sara Parker Pauley

✖ I suppose it's human nature to try to improve upon the world around us, however one defines "improve." From the newest iPhone to the latest model of GPS-steered tractors, we've all benefitted from our human need to advance the day. But sometimes the original was the best model after all. I haven't been able to improve upon my mother's brisket recipe, for example, or my grandfather's way of growing roses.

I had the privilege of traveling to north central Missouri recently where neighbors are returning their land to its original model — that of deep soil prairie. It started with one single pioneering landowner. Then, as neighbors saw the sheer beauty of his land return — with its variety of wildflowers, vibrant prairie grasses, and abundance of wildlife — they began to do the same with their properties. Now with an estimated 10,000 acres in this area, the landscape has returned to its original and intended state. And for other landowners, the value is not just for sheer natural beauty and wildlife, but for the livelihood of their livestock as well (see *Native Grasses for Livestock Producers*, Page 10).

As it turns out, sometimes the original is the best version after all, or as this landowner told me during our visit, "Sometimes a place is meant to be what it is."

Sara Parker Pauley

SARA PARKER PAULEY, DIRECTOR
SARA.PAULEY@MDC.MO.GOV

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Printed with soy ink



Nature LAB

by Bonnie Chasteen

Each month, we highlight research MDC uses to improve fish, forest, and wildlife management.

FISHERIES MANAGEMENT

Refining Electrofishing

✳ How much and what type of electricity does it take to capture a 3-pound smallmouth bass swimming in a fast-flowing Ozark stream? How much for a 60-pound blue catfish or flathead catfish living in a large reservoir or big river?

MDC staff Zach Ford, Andy Turner, and Dave Woods are working with the Missouri Cooperative Fish and Wildlife Research Unit at the University of Missouri-Columbia to answer these questions.

Research partners aim to improve the use of electrofishing for flathead catfish, blue catfish, and smallmouth bass, three of the most popular sportfish in Missouri. "Better methods will give us a more accurate idea of these fish populations," Ford said.

Ford described how electrofishing works. "Electricity in the water acts like a magnet that brings fish to the surface. This lets us dip them into a holding tank, where we can count and evaluate them."

Scientists are using new technology to refine the electrical settings. This will allow them to sample sportfish populations more efficiently, reducing stress

Researchers test electrical settings needed to draw catfish to the surface quickly but harmlessly.



Five-year study aims to improve boat electrofishing techniques for more accurate and standardized sportfish population data

on the fish and increasing sampling accuracy. Settings for sampling specific kinds of sportfish in various water conditions will play an important role in MDC's ongoing effort to standardize sampling, obtain accurate population information, and improve angling opportunities.

Before the project began, MDC staff developed equipment guidelines to ensure safe and effective sampling procedures. "We're putting electricity in the water, so we're very careful to turn off electricity when anglers, boaters, and swimmers are in the vicinity," Ford said.



Electrofishing Research Data 2015-2020

1,500+ fish will be captured, tested, and released over the course of this study.

Smallmouth bass



Blue catfish



Flathead catfish



Generally, **2,500-4,500** watts of power are needed to effectively collect sportfish.

Volts, amps, pulse frequency, and waveform are all aspects of electricity that can be manipulated to help biologists capture fish.

The conductivity of the water and of fishes' bodies plays an important role in how electricity is used to capture fish.

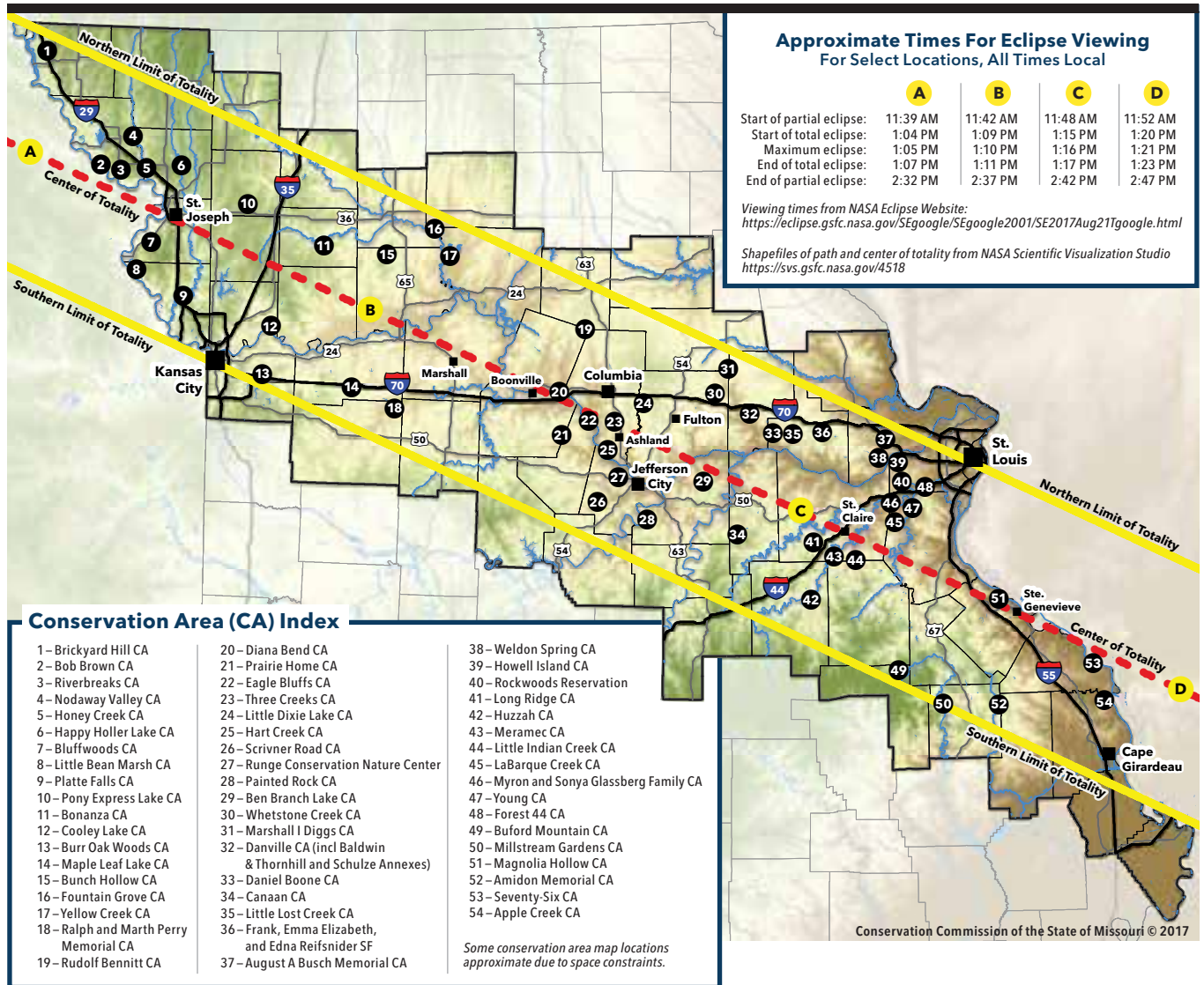
Using the right waveform, researchers can force some fish to swim toward the boat for capture.

Watch underwater footage of electrofishing at short.mdc.mo.gov/Zih

PHOTOGRAPHS: NOPPADOL POTHONG; FISH ILLUSTRATIONS: MARK RATHIEL

In Brief

News and updates from MDC



WATCH TOTAL SOLAR ECLIPSE AT MDC AREAS

CONSERVATION
AREAS OFFER AN
ESCAPE FROM
CROWDED CITIES
AND LIGHT
POLLUTION

➔ Grab your solar eclipse-approved shades and head to one of our 54 conservation areas that lie in the path of this once-in-a-lifetime event. While there, you can enjoy regular outdoor activities – such as fishing, hiking, and wildlife watching – in a far-from-regular way when the moon passes in front of the sun. The eclipse will also bring a rare chance for those watching wildlife to catch out-of-the-ordinary behaviors.

“As the sky becomes darker during the eclipse, some birds may become confused by the lack of light and could exhibit odd behaviors such as going quiet, thinking that night is falling,” said State Ornithologist Sarah Kendrick.

Many of the MDC areas offer an escape from crowded cities and light pollution, and all the recommended areas have restrooms for visitor convenience. While all areas are free to access and open to the public, some may require visitors to obtain a special-use permit for group camping.

For an interactive map of the eclipse’s path across Missouri, approximate times to watch, a full list of recommended conservation areas for viewing, and details on each area, visit mdc.mo.gov/eclipse.

DEER-FEEDING BAN EXPANDED TO 41 COUNTIES

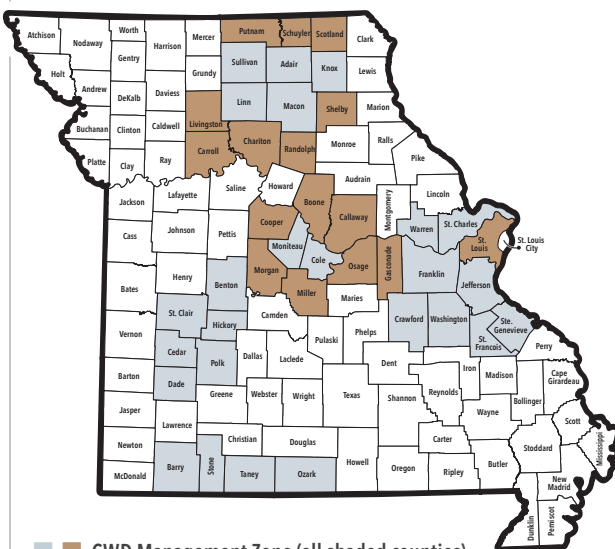
A deer-feeding ban went into effect July 1 for residents of 41 counties that are part of the department's Chronic Wasting Disease (CWD) Management Zone. The goal of the expanded feeding ban is to help limit the spread of CWD. Not feeding deer is a simple step anyone can take to help prevent the spread of disease.

"CWD is spread both directly from deer to deer or indirectly from contaminated food, water, or soil, and the potential for transmission increases when deer gather in larger, concentrated numbers," said MDC Wildlife Disease Coordinator Jasmine Batten. "Feeding deer or placing minerals for deer unnaturally concentrates the animals and can help spread the deadly disease."

According to the *Wildlife Code of Missouri*, the placement of grain, salt products, minerals, and other consumable natural and manufactured products used to attract deer is prohibited year-round within counties in the CWD Management Zone. This regulation does not pertain to food plots.

"Feed is different than a food plot because artificial feed is typically continually replaced," Batten said. "Food plots typically cover a much larger area where the food source is more spread out and once consumed, it is not replaced over and over again."

The 41 counties affected by this regulation include Adair, Barry, Benton, Boone, Callaway, Carroll, Cedar, Chariton, Cole, Cooper, Crawford, Dade, Franklin, Gasconade, Hickory, Jefferson, Knox, Linn, Livingston, Macon, Miller, Moniteau, Morgan, Osage, Ozark, Polk, Putnam, Randolph, Schuyler, Scotland, Shelby, St. Charles, St. Clair, St. Francois, St. Louis, Ste. Genevieve, Stone, Sullivan, Taney, Warren, and Washington.



■ CWD Management Zone (all shaded counties)
 ■ In these counties, if you harvest a deer during Nov. 11-12, you must take it (or the head with at least 6 inches of neck attached) on the day of harvest to a designated CWD sampling station. See short.mdc.mo.gov/ZiE.



Got a Question for Ask MDC?

Send it to AskMDC@mdc.mo.gov
 or call 573-522-4115, ext. 3848.

Q: I love feeding the hummingbirds every spring. I notice they disappear for a while and return. Where do they go?

➔ The absence of ruby-throated hummingbirds in late May and early June is normal. In fact, fluctuation in feeder attendance is to be expected. Depending on where in the state you live, the arrival and departure of breeding and migratory hummingbirds varies.

In spring, a surge of northbound migrants use nectar at the feeders. Once the migrants pass through Missouri, the crowd tapers off, leaving the state's breeding summer residents – a sizeable population in Missouri's wooded landscape.

Males are fiercely territorial, defending feeders and flowers for the females to use during the spring nesting season. But nesting females don't visit the feeders often. Rather, they spend their time hunting insects to feed their newly hatched nestlings.

After the young fledge in early July, more birds gather at the feeders once again.

As southern migration commences in late summer

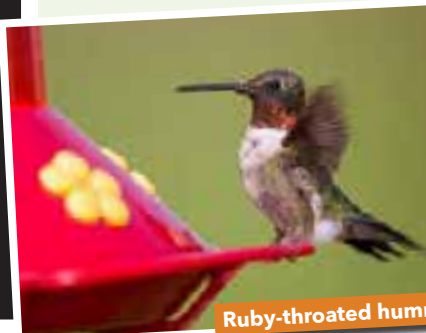
and early fall, the number of resident hummingbirds may decline. Adult males are the first to depart, heading out in early July. Females and the young follow. Backyard feeders serve as welcome pit stops, offering birds a place to rest and refuel. Feeder visits will reflect this as the flow of southbound migrants through Missouri increases, peaking around Labor Day.

The crowd gradually tapers off until the last hummingbird straggles through in mid-October.

Q: Is it true waterfowl sometimes deposit fish eggs in other water bodies, essentially moving them from one place to another?

➔ We're not aware of any credible research proving this might happen. There is evidence of waterfowl moving seeds and some wetland invertebrates, but we have not heard of fish eggs being transported.

The digestive process that fish eggs would experience in a bird's gut would be fatal. It may be possible for a bird to move fish eggs stuck to its foot or in vegetation it's carrying, but it's unlikely. When fish appear in an unstocked pond, it is usually the result of intentional stockings or wild fish moving upstream or downstream in a watershed during wet periods.



Ruby-throated hummingbird



Eastern yellow-bellied racer

Q: We found this 3-foot snake with blue eyes in our front yard, sunning itself. We were wondering what causes its eyes to be blue, and if this affects its vision?

➔ This eastern yellow-bellied racer is about to shed its skin, including the layer over the eye. As the skin loosens and fluid builds

between the old and new layers, the shedding gives the eye a blue coloration. The process takes one to two weeks and can render the snake nearly blind.

Snakes shed their skin periodically as they grow. During the active season, young snakes usually shed once every four to five weeks. Adults may shed every six to eight weeks.

AGENT ADVICE

from

Chase Wright

SALINE COUNTY
CONSERVATION AGENT

Fishin' in the Dark. It's not just a hit single by the Nitty Gritty Dirt Band. It's a time-honored tradition of die-hard anglers who love to fish but want to escape the summertime heat. Before you grab your equipment and head for the nearest body of water, consider these safety tips for an enjoyable night under the stars:

- ➔ Be prepared. Get your gear ready before you get there.
- ➔ If you're on a boat, life jackets must be accessible. Passengers age 7 or younger must wear life jackets.
- ➔ Bring a flashlight, lantern, or other source of light.
- ➔ Use bug spray. Mosquitoes are much worse at night than during the day.
- ➔ Take a charged cell phone.
- ➔ Tell someone — a family member or friend — your plan for the evening and when you intend to return home.

Many species of fish are in season. For possession limits, valid permit information, and legal methods, check the *Wildlife Code of Missouri*, or visit **short.mdc.mo.gov/ZiL**.



What IS it?

Can you guess this month's natural wonder?

The answer is on Page 9.





MCHF helps in a number of ways, from making hunting areas accessible to supporting stream clean-up and kids' programs.

A Key Partnership for Conservation Marks 20 Years

by Bill Graham

The Missouri Conservation Heritage Foundation (MCHF) is celebrating 20 years of helping Missourians enhance natural resources and outdoor education. Formed in 1997, MCHF is a nonprofit charitable organization working with MDC and other partners to benefit Missouri's outdoors. From hunting programs for military veterans with special needs to battling feral hogs or invasive plants in natural areas, MCHF provides a helping hand via grants.

"Our state's conservation legacy and the department exist because of the support of citizens and partners," said Jennifer Battson Warren, MDC deputy director. "The Missouri Conservation Heritage Foundation is a fantastic partner because they connect generous individuals and philanthropic organizations with projects that memorialize donors' conservation values. These projects provide improved opportunities for citizens to experience Missouri's rich outdoor heritage."

MCHF has provided more than \$20 million for conservation projects such as stream corridor protections, helping youth learn how to hunt or fish, prairie restoration, or making hunting and fishing areas accessible for those with mobility challenges. Funding sources for MCHF include donations and grants. In addition, MCHF receives funds from the Stream Stewardship Trust Fund, which is funded by voluntary mitigation payments made for alterations to streams.

"We advance conservation and the appreciation of forest, fish, and wildlife resources by applying financial resources," said Kevin Roper, MCHF executive director. "We collaborate with donors and other partners to provide this kind of support throughout the state."

Going forward, MCHF plans to emphasize youth education, conserving endangered species and species of conservation concern, and helping veterans enjoy the outdoors. MCHF also recognizes conservation legends via the National Lewis and Clark Conservation Awards.

This spring, in partnership with MDC, MCHF hosted 2,100 competitors from 127 schools at the Missouri National Archery in Schools state championship tournament in Branson. Foundation grants also pay for equipment and costs for community youth hunting and fishing events. Grants help schools develop outdoor classrooms. MCHF supports Discover Nature – Girls Camps where girls learn shooting, fishing, and nature interpretive skills.

Pollinator species and birds benefit as well. MCHF was awarded a \$250,000 grant in 2016 from the National Fish and Wildlife Foundation for monarch butterfly conservation. The grant will be paired with nearly \$566,608 in

matching funds from partners working on habitat and educational programs to benefit monarchs. MCHF partners with a Honduran ecotourism company to raise funds for habitat protections for neotropical migratory birds, species that nest in Missouri forests during summer but overwinter in Central or South America. In Missouri, MCHF provides funds for feral hog eradication. The organization also provides numerous small grants, such as money for nature centers to battle invasive plants.

MCHF grants support Wounded Warrior Hunts, which are designed specifically for veterans with disabilities. Grants helped purchase all-terrain track chairs that carry hunters and anglers afield.

A volunteer board of directors and a small professional staff manage MCHF in close partnership with MDC. The foundation is well-aimed toward the future, said Carroll Wilkerson of Columbia, chair of the MCHF Board of Directors.

"If someone has a passion for the outdoors, and if they want to make a donation or leave part of their estate for the betterment of the outdoors, they can utilize the foundation," Wilkerson said.

Russ and Lynn Giron of Lee's Summit lost their son, Nathan Giron, 18, in a tragic auto accident. Because he enjoyed fishing, they honored his memory by making a donation to MCHF, which enabled a grant making it possible to give away 300 new fishing rods and reels at the 2016 National Hunting and Fishing Day activities at MDC's James A. Reed Memorial Wildlife Area.

"Your passion for conservation can reach through time to make a difference when you make a planned gift," said Jan Syrgos, MCHF communications specialist. "We are the nonprofit that is dedicated to supporting the most crucial of conservation efforts in Missouri."



Monarch butterfly

To contact MCHF, visit mochf.org, or call 573-634-2080 or toll free 800-227-1488, or email mchf@mochf.org.



REBOOT THROUGH NATURE

We recharge our cell phones, tablets, and computers when they start running slowly, but what about ourselves? We also need to shut down and reboot to clear our systems of too much stuff, including the stresses of technology.

Our world of nonstop screen time and even artificial lighting throws off our internal clock, or circadian rhythm. This can lead to lack of adequate sleep or poor-quality sleep. As a result, our health suffers, performance at work and school suffers, accidents increase, and energy decreases.

One simple solution can make all the difference – a weekend of camping.

Turning off technology and turning onto nature can have positive effects on our health and well-being. Research from the University of Colorado-Boulder found that just a weekend away in the woods sleeping under the stars (without technology) can reset our internal clocks, resulting in better sleep both during and after the mini-vacation.

Want to start your getaway? Visit short.mdc.mo.gov/Z4V to find MDC campsites near you.

DISCOVER NATURE AT THE STATE FAIR

Visit the Conservation Building from 9 a.m. to 9 p.m. at the Missouri State Fair in Sedalia Aug. 10–20. See live fish and other native animals such as snakes, turtles, and amphibians. Learn about and see displays of native plants that help butterflies and other important pollinators. Ask questions of MDC staff, get educational materials, and have fun.

Don't miss our air-conditioned Conservation Kids' Discovery Room between 10 a.m. and 6 p.m. for hands-on fun discovering nature through crafts and other activities.

Enjoy these free conservation-related programs at our outdoor pavilion:

WATCH RAPTORS See a live eagle and other birds of prey up close at the Raptors of Missouri presentation Aug. 10 and Aug. 19 at 11 a.m., 1:30 p.m., and 4 p.m.

LEARN TO CLEAN AND COOK FISH Learn how to prepare a fresh catch at the Fish Cooking and Cleaning demonstration Aug. 11 and Aug. 12 at 11 a.m. and 1:30 p.m.

BE BEAR AWARE Learn about black bears in Missouri and how to Be Bear Aware Aug. 13 and Aug. 20 at 11 a.m. and 1:30 p.m.

OPERATION GAME THIEF Visit with conservation agents and see the MDC Operation Game Thief traveling display trailer all day Aug. 14–16.

FIELD TO FORK Learn how to clean and cook harvested game at the Field to Fork demonstration Aug. 17 at 11 a.m. and 1:30 p.m.

HISTORIC SAWMILL See a working model sawmill in operation at Forest Products: The Circular Sawmill Aug. 18 at 11 a.m. and 1:30 p.m.

Learn more about MDC programs, events, and other offerings at mdc.mo.gov.

What IS it?

PLAINS COREOPSIS FLOWER

Plains coreopsis (*Coreopsis tinctoria*) is an annual flowering plant that blooms from June through September. Its yellow flowers with red-brown centers emerge from large branches, dotted with narrow leaflets about 4 inches long. The plains coreopsis grows naturally in prairies and glades, reaching 2 to 4 feet tall. It prefers full sun and well-drained soil. Plains coreopsis is the perfect addition to your native garden, and it is sure to attract butterflies and other pollinators.

Photograph by Noppadol Paothong



Native Grasses

for Livestock Producers

MANAGE GRASSES TO BENEFIT CATTLE AS WELL AS WILDLIFE

by Kevin Borisenko

Missouri's landscape is forever changing. Since the first European settlement, Missouri's native habitats have been altered by population expansion, the agricultural industry, the industrial age, and recreation, just to name a few. Today, competition for the finite resource we call land is fierce. So how do we carve out a place that has clean water, healthy grasslands, and abundant wildlife and remain economically sound?

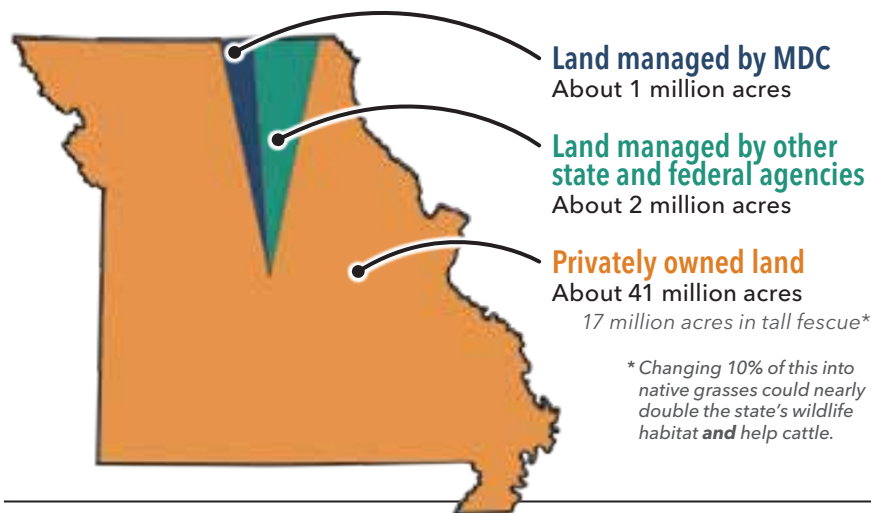
We work together.



Cattle graze in a
pasture converted
to native grassland.

PHOTOGRAPH BY
DAVID STONNER

Missouri by the Acre



Missouri is approximately 44 million acres in size. MDC manages about 1 million acres statewide, or approximately 2 percent of the state. Combine all land managed by other state and federal agencies, and that percentage climbs to around 7 percent of the total land base in public ownership. That's not a lot of room for wildlife to flourish.

So what about the other 41 million acres? Take a trip across Missouri, and you'll see cities and towns connected by an extensive road system lined with private land. You may notice a significant number of farms with vast fields of crops or cattle meandering in pastures. A 2016 U.S. Department of Agriculture (USDA) report found all grain crops in Missouri totaled about 14 million acres. Missouri also ranked second nationally in total number of cattle with about 69,000 cattle and hay operations.

Approximately 50 percent of Missouri's agriculture economy is forage based, meaning we grow a lot of grass. The dominant grass on Missouri's landscape is tall fescue, with an estimated 17 million acres, according to the University of Missouri's Forage Systems Research Center. Though not all of that is used in cattle production or hay, it does represent a unique opportunity for conservationists and farmers to work together toward a common goal.

Tall fescue is the primary reason why Missouri can produce so many cattle, but it offers less benefit for wildlife than many of our native warm-season grasses.

MDC believes adding a diverse mixture of grasses for grazing or haying on each farm can improve cattle gains and health while offering enhanced wildlife habitat.

Getting in the Mix

It's easy to understand why MDC would like more diverse grasslands in Missouri. Native prairies supported countless wildlife through the ages. Wildlife big and small depend on the ecological functions these areas provide for food, shelter, and sheer survival. Grassland wildlife have evolved to take full advantage of species composition, bloom times, structure, and function to sustain them. For example, MDC continues efforts to restore and manage greater prairie-chickens in select landscapes in northwest and southwest Missouri. Prairie-chickens evolved to depend on the vast grassland landscapes and as their numbers declined, they needed a helping hand to remain in Missouri. Without the assistance of private landowners in these areas, the restoration of these iconic birds would not be possible. Biologists continue to work with producers to

remove trees and restore diverse native grasslands for prairie-chickens and other grassland birds.

What makes the partnership work is finding common ground.

When MDC is working to improve greater prairie-chicken habitat with producers, pasture land is converted to native mixes. The greater amount of structural diversity provides birds like greater prairie-chickens or quail the cover and nesting habitat they need. These areas generally offer increased bug diversity, a primary food source for young chicks. Without management, native grasses become too tall and thick to be useful.

Grazing is a useful tool to manage native grasses on a working farm. Cattle are used in ways that mimic the disturbances that occurred naturally with grazers like bison. Grazing creates



NATIVE GRASSES: DAVID STONNER



Native grasses don't form sod and are easier for wildlife to use without hurting forage production.

Ground-nesting birds, like prairie-chickens and quail, prefer a diversity of plants for nesting and raising young.



Greater prairie-chicken

PRAIRIE-CHICKEN: NOPPADOL PAOTHONG

variable vegetation heights and small areas of bare soil, which are necessary for wildlife like the greater-prairie chicken.

"Warm season grasses are well-adapted to northwest Missouri's soils and offer nutritional forage in the warmer months of June, July, and August when cool season grasses are less vigorous," said Kendall Coleman, a private land conservationist (PLC) with MDC. "A diverse mix ensures that, regardless of the grazing period, there is something nutritional to offer that animal."

Forming Partnerships

Partners like Robin Frank, a cattle farmer in northwest Missouri prairie-chicken country, are critical to the success of restoration efforts. He helps create a bigger footprint of space that the birds can use as the population grows. Frank converted approximately 500 acres of fescue pasture to warm-season grasses with plans to convert about 20 percent of his available grazing acres to native mixes.

"Cattle do well on this summer native warm-season grass forage," Frank said. "I have experienced improved conception rates and increased gains with this practice, compared to normal fescue pasture."

Native grasses, though adapted to our soils and climate, do offer some challenges to producers. Establishing a healthy stand of native grass takes time and commitment to manage. Time and the loss of existing forage start to cut into the bottom line, making it a tough sell even though long-term gains may surpass the short-term losses. To help bridge that gap, PLC Dave Niebruegge teamed up with a local landowner in Pettis County to experiment with ways to minimize forage loss while establishing warm-season grasses.

Test Shows Promise

Cattle and Century Farm owner Johnie Brauer had an interest in wildlife and wanted to bring quail and rabbits back to the farm like he experienced as a child. Together, Brauer and Niebruegge worked out a plan to experiment on approximately 20 acres of the farm, incorporating annual cover crops into a native warm-season grass planting. The cover crop mix served as a nurse crop for warm-season grasses and provided supplemental forage during the establishment of native grass. As the cover crops and native grass grew alongside each other in the field, cattle grazed the new planting. The cattle favored the more robust cover crops to the newly sprouted natives, allowing them to get a good start. Cover crops have an added benefit that promote improved soil health and quality.

"The annual forages can really fill a void during the year when other perennial forages are not producing very well," said Niebruegge.

During the first year of the experiment, calves were put into the field in August using a high-stock density/short-duration grazing method. After 30 days of grazing, calves showed an average daily gain of two pounds. According to Brauer, the cover crops helped get his cows through the summer lull and in good shape to put them in fall cool-season pastures.

Results from Brauer and Niebruegge's experiment are still pending, but the outlook is promising. As the experiment reaches its third year, native grasses are abundant and well established. Brauer sees and hears more wildlife, like quail and rabbits, than he can remember in recent years.



Bobwhite quail




"By managing the farm for wildlife, my cattle are not suffering whatsoever," Brauer said. "I'm managing it in a way the cattle benefit, as well as the wildlife."

Working Together

Another aspect of cattle farming is the availability of hay, an important supplement. The amount of forage available outside the growing season is critically important both economically and to the health of a cattle producer's animals. Careful planning and record keeping help improve the family business and inform future management decisions. Just ask Jim and Mike Massman of Osage County. They were early adopters of native grass in their operation. Jim and Mike planted a 13-acre field of big bluestem in 2000 to provide quality forage for their cattle. When Jim noticed Johnson grass invading his stand of big bluestem, he



Eastern cottontail rabbit



Johnie Brauer and Dave Niebruegge assess cattle usage in their experimental cover-crop and native warm-season grass pasture.

goals and keep fish, forest, and wildlife in mind.”

The Massmans have tracked their forage production, and the results are impressive. From 2009–2014, the 13-acre field of big bluestem averaged 3.8 tons per acre of hay. This includes the drought year of 2012, which produced 1.9 tons per acre that July. The Massmans’ management consists of light fertilization (60 pounds per acre) of nitrogen each year and a three-year burn rotation. Burning may seem counterintuitive to create forage, but the numbers show spikes in tonnage produced following a burn year. They have never had to replant or overseed the field.

When Jim was asked if he would have done anything differently, his only response was, “I should have planted big bluestem 20 years earlier.”

There are many more examples of MDC and landowners working together to make a difference in Missouri. The Department of Conservation continues to explore new and innovative ways to expand partnerships to ensure the long-term sustainability of Missouri’s fish, forest, and wildlife resources. Whether actively seeking the assistance of landowners to help keep remnant species on the landscape, finding ways to bridge the gap on local farms, or using natives to keep operations running efficiently, working together is essential.

Considering Missouri’s current landscape, we have an opportunity to make a difference for future generations. Working together to implement more wildlife-friendly grasses will have a profound effect on habitat in Missouri. Not all of the 17 million acres of tall fescue in Missouri are used in cattle production or hay. But if landowners were able to change even 10 percent of that total acreage to native warm-season grasses, they could nearly double the amount of wildlife habitat MDC currently manages statewide. What a great opportunity to provide a win for Missouri’s wildlife and cattle producers. ▲

Kevin Borisenko is a Private Land Services chief for MDC. When he isn’t promoting the virtues of native grasses, he enjoys hunting, fishing, and shooting with family and friends.



The Massmans’ cattle and calves graze in late summer. Even with a July hay harvest, the regrowth provides plenty of forage.

reached out to PLC Seth Barrioz for assistance in 2013. As Barrioz and Jim worked together to eliminate the Johnson grass, Barrioz became more familiar with the Massmans’ operation and goals.

“While a solid stand of big bluestem is not the most beneficial from a wildlife perspective, it is a step in the right direction,” said Barrioz. “We would like to see a more diverse mix of species, but I am here to help the landowner reach their



Hunter Education Turns 30

PROGRAM CELEBRATES THREE DECADES
OF CREATING SAFE HUNTERS WITH MORE
OPTIONS FOR GETTING CERTIFIED

by Kyle Lairmore | photographs by David Stonner

Kevin Dixon enjoyed completing Missouri's Hunter Education Program in 1993, shortly after he moved to Union, but he wasn't interested in teaching it. Then he had a frightening and potentially dangerous experience while turkey hunting one spring.

"I was headed up a hill toward lots of gobbling — about 100–125 yards above me," Dixon said. "Suddenly, a loud BOOM and a second blast came from where the turkeys were gobbling. It gave me quite a scare. I retreated quickly back the way I had come. I had no idea those other hunters were there — I was told they'd be across the creek from me, almost a

quarter mile away. If I had made it to that hilltop, I could easily have been in the line of fire. After that, I decided to get into teaching hunter ed and have done so now for almost 20 years."

Kevin's story illustrates why the Missouri Conservation Commission adopted a mandatory hunter education program in 1987. That same year, Missouri recorded 98 hunting incidents, the highest rate in the state's history. Since then, firearm-related hunting incidents have declined by over 70 percent in Missouri. In 2016, for example, only 10 hunting incidents, none with fatalities, were reported.



"I love the outdoors, love being outdoors, and I enjoy being able to share my passion. As a biologist, I can also share the science behind things, such as ecological concepts, management practices, and wildlife disease prevention, transmission, and control."

Kevin Dixon – volunteer instructor, Union

Do You Like to Shoot or Want to Hunt?

To keep hunting and firearms-related incidents low, MDC encourages gun owners and those interested in hunting to take hunter education.

Whether you pursue hunter education through the new online option, with the self-study workbook, or in the classroom, start the program months before you plan to go afield. Early registration ensures you'll find a course near you and you'll be educated, trained, and certified to take to the woods on opening day.

Even if you're only interested in shooting sports, such as clay targets or rifle shooting, Missouri's Hunter Education Program can make you a better, safer shooter. Visit mdc.mo.gov/huntereducation to find a course near you.

Who Must Become Hunter-Education Certified?

Any hunter born on or after Jan. 1, 1967, must obtain Missouri's hunter education certification. If you plan to hunt during a Missouri firearms season or you are acting as an adult mentor, you **MUST** first complete an approved hunter-education

certification program and provide proof of completion **UNLESS** you qualify for one of the exceptions listed below:

- You are 15 or younger and will be hunting with a properly permitted adult mentor 18 or older.
- You were born before Jan. 1, 1967.
- You received a disability exemption from MDC's Protection Division.
- You are 16 or older, have purchased an Apprentice Hunter Authorization, and will be hunting with a properly permitted adult mentor 18 or older.
- You are the landowner or lessee hunting on land you own or upon which you reside.
- You can prove you completed an approved hunter education program in another state.

What Does The Program Cover?

Missouri's Hunter Education Program provides a foundation in hunting safety and ethics. It instills responsibility, improves skills and knowledge, and encourages interaction between beginner and veteran hunters. Students will complete the program knowing more about the following topics:

- Hunter responsibility and ethics
- How to operate a firearm safely
- Wildlife identification, game care, survival, and first-aid skills
- Firearm-handling skills and hunting techniques
- Wildlife conservation and management
- Regulations and information unique to Missouri

Who Can Take The Program?

Anyone age 11 or older who enjoys the outdoors will benefit from hunter education. The program is also an excellent refresher for veteran hunters.

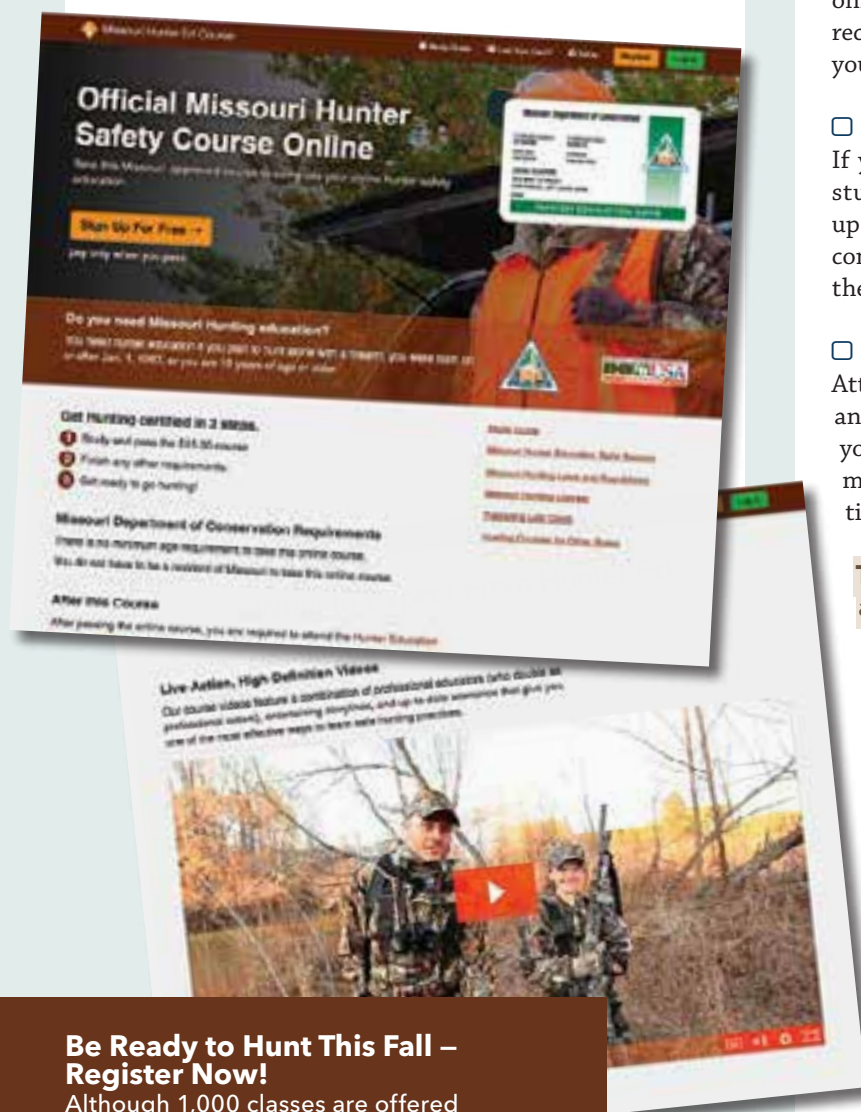
How Do I Earn My Missouri Hunter Education Certificate?

Adult All Online Option

New for 2017

\$15 fee (paid to online program provider)

Anyone age 16 and older can complete the entire program online. Our convenient online/mobile program is accessible to those with hearing difficulties. Find it at **hunter-ed.com/Missouri**. It includes text, audio, images, graphs, videos, and interactive animation to help you complete all the chapter reviews. Once you've completed and passed a 60-question final exam with a score of 80 percent or better, you will receive your certification.



Be Ready to Hunt This Fall – Register Now!

Although 1,000 classes are offered statewide, they fill up fast. Find a class near you and register as soon as possible. Throughout the year, the best times to find available hunter education classes are March and April before spring turkey season and August and September before deer season.

Blended Options

These options give you three ways to complete the knowledge portion, regardless of your age. Choose from online, printed self-study guide, or classroom session. After you successfully complete the knowledge portion, you'll be qualified to enter a skills session.

First, choose one knowledge session

☐ Online \$15 fee (paid to online program provider)

In this option, you complete the knowledge portion online. Once you complete the chapter reviews, you will receive an online skills-session qualifier certificate, which you must present to enter the required skills session.

☐ Self-study guide Free

If you prefer printed study materials, you can order a study guide at **short.mdc.mo.gov/Zox**, or pick one up at an MDC office. Study the illustrated manual, complete all chapter review questions, and present it to the instructor at the skills session.

☐ Classroom session Free

Attend a four-hour classroom session featuring lectures and videos. Register at **short.mdc.mo.gov/Z42** or call your regional office. After the classroom session, you must complete all student manual chapter review questions and present it to the instructor at the skills session.

Then complete the free skills session and pass the exam

Regardless of your age, once you've completed one of the three knowledge session options, you **MUST** register for and attend a four-hour skills session at **short.mdc.mo.gov/Zof**, or call your regional office.

To enter this session, you **MUST** present your online skills-session qualifier certificate **OR** your student manual with all chapter reviews completed to gain entry.

The skills session includes a mandatory 35-question, multiple-choice final exam. After successfully completing the skills session, you will receive a temporary certificate so you can purchase a permit and hunt immediately.

"When I came into hunter education, we were still having incidents in the 90s, with fatalities in the 20s. **As long as we have one incident, we still have work to do.**"

Jim Ragland – volunteer instructor, Florissant

Can Kids Try Hunting Without Becoming Hunter-Education Certified?

Youth should begin hunting with an adult mentor to become familiar with hunting and terminology before taking the program.

If they are in the immediate presence of an adult mentor who possesses the proper permit, youths younger than age 16 DO NOT need hunter education to hunt any game species in Missouri until they are ready to hunt alone.

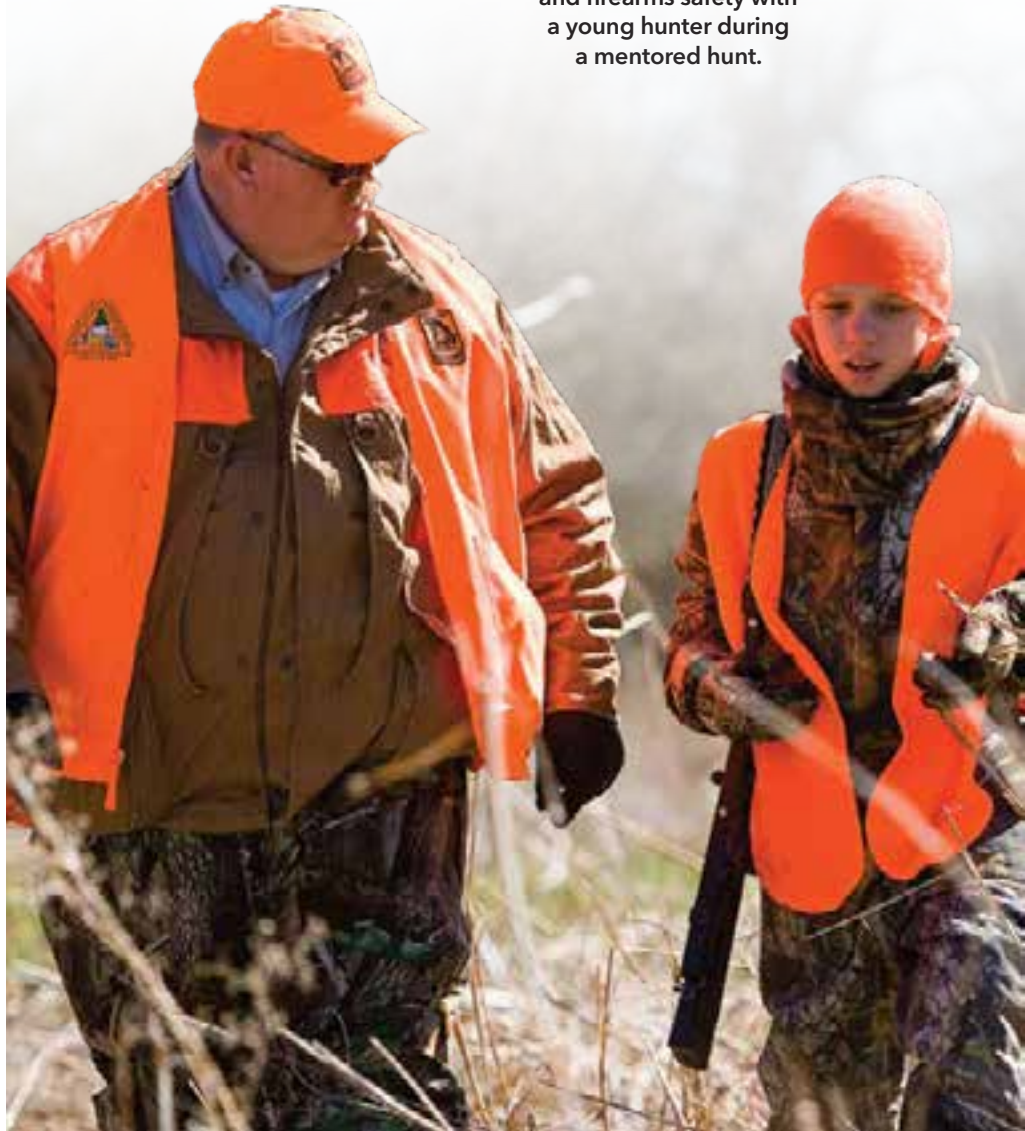
What About Adults?

The Apprentice Hunter Program lets people 16 and older try hunting as long as they hunt with a properly permitted adult (18 or older) mentor. Learn about the Apprentice Hunter Program at **short.mdc.mo.gov/ZiX**, or call your regional office (see Page 2 for phone numbers).

To learn more about Missouri's Hunter Education Program, visit **mdc.mo.gov/huntereducation** or contact hunter education staff in Jefferson City or any of the eight regional offices. ▲

Kyle Lairmore has worked for MDC for over 12 years. He began as a private land conservationist, and he currently serves as MDC's hunter education and shooting range coordinator. He is an avid hunter and shooter, but what he enjoys the most is sharing these experiences with others.

An instructor shares his knowledge of hunting and firearms safety with a young hunter during a mentored hunt.



Hunter Education in Schools

Many Missouri schools teach hunter education as part of their school curriculum. If your school is interested in offering Missouri's Hunter Education Program, please call the outdoor skills specialist at your regional office. See Page 2 for phone numbers.

"Whether you hunt or not, gun safety is always important!"

I always ask my students if their parents or family members have firearms, and usually the answer is yes. This course teaches the students how to be responsible and safe with the firearms around them. It also highlights the incidents that can occur and explains how cautious you should be when using and being in the presence of a firearm."

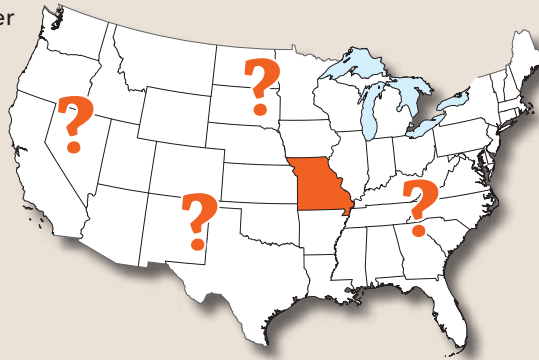
Kelsey Cary – teacher, Winfield School District

A student demonstrates how to properly load and unload a firearm.



Check Other States' Hunter Ed Requirements

If you're planning to hunt out-of-state, be sure to check other states' regulations well in advance of your trip. All states recognize Missouri's Hunter Education Certification, but not all states have the same age exemption. For example, Missouri requires hunter education for anyone born on or after Jan. 1, 1967, while Colorado requires hunter education for anyone born on or after Jan. 1, 1949. This means many exempt Missourians may not be exempt in Colorado or other states. It is important to be aware of this before traveling out-of-state to give yourself time to obtain a Missouri Hunter Education Certification.



"Many people in urban and suburban areas do not get to grow up hunting and learning from the older generation. **Hunter education gives them an opportunity to learn from and meet people who want to share their love of hunting.**"

Linda Du Brul – volunteer instructor, Everton

Missouri's

MON

Five species can
top **100 pounds**
and test
anglers' strength

BY CRAIG GEMMING



STER

Fish



MDC
Fisheries Biologist
Brian McKeage
holds a 50-pound
lake sturgeon.

It was a warm spring day, so my friend and I headed to the river to do a little fishing. We hoped to catch a few small channel catfish for dinner. After we baited the lines and cast them out at our favorite fishing hole, we leaned back in our chairs to enjoy the cool breeze and the warm sun on our faces. All of a sudden, my friend's pole bent over double and nearly jerked out of his hands. We knew this fish had to be big! The line started screaming off his reel, and we quickly realized we needed to follow this fish if we were going to land it. Tackle boxes, rods and reels, seat cushions, and bait buckets went flying as we scrambled around the boat to pull up the anchors and find the dip net. After a 15-minute battle, we brought the fish to the side of the boat — and realized our landing net was way too small. "What a monster!" my friend said. After a few agonizing minutes and two strained backs, we finally wrestled the fish into the boat. Exaggeration, you say? Not hardly! The fish my friend caught was a blue catfish that tipped the scales at 81 pounds.

Most Missourians don't know our state is home to five species of fish that have the potential to become monster fish. These species are the only fish in Missouri that are capable of attaining weights of 100 pounds or more. Included on the monster fish list are alligator gar, lake sturgeon, paddlefish, flathead catfish, and blue catfish.



Alligator Gar

This is the largest of the monster fish found in Missouri. In fact, it is the second largest freshwater fish in North America next to the white sturgeon. Alligator gar can reach lengths of up to 10 feet and weights up to 350 pounds, although most large adults range from 5–8 feet long and weigh between 100 and 300 pounds. The current Missouri record is 127 pounds. In 2011, a Mississippi commercial fisherman caught a 327-pound alligator gar in his net. That fish was determined to be 99 years old! The alligator gar is a long, heavy-bodied fish with a somewhat short, very wide snout that resembles an alligator's snout. They eat mostly nongame fish but are also known to eat water birds. These fish often rest quietly near the water surface, resembling a log, waiting in ambush for their prey. To capture prey, they quickly snap their head to the side and grab it with their large teeth. Alligator gar can be found throughout the lower Mississippi River system upstream to Missouri, Illinois, and Ohio. The alligator gar has become rare over most of its former range mainly due to habitat loss and changes. In 2007 and 2009, alligator gar were stocked at Mingo National Wildlife Refuge (NWR) in southeastern Missouri by MDC and the U.S. Fish and Wildlife Service. Since that time, nine other conservation areas have been added to the stocking program. The goal of those stockings was to restore alligator gar to some of its native range in Missouri. On Mingo NWR, alligator gar must be released unharmed immediately after being caught. No gigging or bow fishing is permitted on the refuge. However, alligator gar can be caught throughout the rest of the state by a variety of methods. The department still encourages catch-and-release for alligator gar as well as the reporting of any sightings.

MDC
Fisheries Biologist
Salvador Mondragon
holds a 51-pound
alligator gar.



Catch a Missouri Monster?

Check out MDC's Master Angler and State Record Fish programs to see if your fish qualifies for special recognition. While you're there, watch videos of state-record alligator gar, flathead catfish, paddlefish, and blue catfish. Learn more at short.mdc.mo.gov/Z3t.



Lake Sturgeon

Prior to the 1900s, lake sturgeon was a common and important commercial fish in Missouri waters, especially in the Mississippi River, where lake sturgeon weighing over 300 pounds were fairly common. Since that time, however, it has become very rare in Missouri and is listed as a state-endangered species. The current Wisconsin lake sturgeon spearfishing record is 212 pounds. Lake sturgeon have a shark-like tail, a sucker-like mouth underneath the head, and four large barbels (or whiskers) that dangle under the nose. Instead of the body being covered by typical fish scales, the lake sturgeon's body has several lengthwise rows of bony plates called *scutes*. Lake sturgeon feed on the bottom, and their diet consists mostly of aquatic insects, crayfish, and small fish. In 1984, MDC began a restoration program to try and reestablish fishable populations of lake sturgeon in Missouri waters. Since that time, Blind Pony and Lost Valley hatcheries have been raising lake sturgeon and then stocking them into the Mississippi and Missouri rivers. It is now fairly common to get reports of lake sturgeon up to 80 pounds being caught from those early stockings. If caught, lake sturgeon must be immediately returned to the water unharmed because they are still endangered in Missouri. Someday, MDC hopes to remove them from Missouri's endangered species list.



MDC Fisheries Regional Supervisor Chris Kennedy and U.S. Fish and Wildlife Service biologist stock alligator gar at Mingo National Wildlife Refuge in southeast Missouri.



FISH: LANCE MERRY; BIOLOGIST WITH ALLIGATOR GAR: JASON CRITES; ALLIGATOR GAR STOCKING, STURGEON SURVEY: NOPPADOL PAOTHONG



Travis Moore and another MDC fisheries biologist place a lake sturgeon in a holding tank so they can take measurements.



Flathead Catfish

Probably the most popular and sought-after monster fish in Missouri is the flathead catfish. As the name indicates, flathead catfish have very broad, flattened heads as well as very large mouths. Like all catfish, they have long, slender barbels that surround the mouth. Adult flathead catfish commonly weigh 40 pounds or more. The Missouri rod-and-reel state record was caught in Montrose Lake in

2003 and weighed 77 pounds, 8 ounces. The Missouri alternative methods state record was caught in 2015 on a trotline from the Missouri River and weighed 100 pounds. The world-record flathead catfish weighed 123 pounds, 9 ounces, and it was caught in 1998 from Elk City Reservoir in Kansas. Flathead catfish typically occur in the large rivers and lakes in Missouri. They are more abundant in the Missouri and Mississippi rivers than anywhere else in the state. One unique trait flathead catfish have is that they will attempt to eat almost anything they can get

into their large mouths. They prefer live prey and can eat a fish up to 60 percent of their body length if it fits into their mouth. For example, a 5-foot-long flathead catfish could swallow a 3-foot-long fish! Anglers use a variety of fishing methods to catch flatheads, including trotline, throwline, limb line, bank pole, and jugging. Most serious catfish anglers prefer to use live bait, such as green sunfish, gizzard shad, bullhead, bluegill, and goldfish, when fishing for this species. No matter your choice of fishing method or bait, you're in for a lot of fun if you hook into one of these monsters.

FISH: LANCE MERRY; CATFISHING: CLIFF WHITE;
PADDLEFISH SPAWNING: NOPPADOL PAOTHONG

Paddlefish

Also known as spoonbill, paddlefish are one of the more well-known monster fish in Missouri. Paddlefish have a paddle-shaped snout, skin without scales, and, like sharks, a skeleton made of cartilage rather than bone. So how big do they get? The Missouri record paddlefish weighed 140 pounds, 9 ounces, and the world record weighed 144 pounds. Paddlefish are found mostly in our larger rivers and reservoirs, such as the Missouri, Mississippi, and Osage rivers and Lake of the Ozarks, Truman Reservoir, and Table Rock Lake. Construction of Bagnell Dam and Truman Dam eliminated some of the best spawning habitat in the state for paddlefish. As a result, paddlefish populations in Lake of the Ozarks, Truman Reservoir, and Table Rock Lake must now be maintained by annual stockings from fish that are spawned and raised at Blind Pony Hatchery. Paddlefish are filter feeders and feed primarily on microscopic plants and animals in the water. When actively feeding, they swim slowly with their mouth open and strain food out of the water. The paddle-shaped snout, which is covered with sensory organs, is thought to assist with finding food. Because paddlefish will not take bait, they are caught by snagging. Missouri's paddlefish snagging season occurs in the spring to coincide with their spawning migration. Check MDC's **current fishing regulations** to determine paddlefish season dates, length limits, and daily limits.



Know Missouri's Fishing Regulations

Browse seasons, possession and length limits, and other fishing regulations at **short.mdc.mo.gov/ZUK**. Or pick up the *Summary of Missouri Fishing Regulations* wherever permits are sold.



Blue Catfish

This is the largest species of catfish in North America. Like all catfishes, it has skin without scales and barbels around the mouth. They are similar to a channel catfish when small but differ in never having dark spots on the back and sides. Adult blue catfish commonly weigh over 50 pounds. The Missouri rod-and-reel state record weighed 130 pounds and was caught from the lower Missouri River in 2010. The world-record blue catfish was caught in 2011 from John Kerr Reservoir in Virginia and weighed 143 pounds. On a historical note, in his 1950 book, *Steamboating: Sixty-Five Years on Missouri's Rivers*, Captain Bill Heckman reported the largest fish ever caught in the



Aquaculture Specialist Michelle Dalbey prepares to spawn paddlefish at MDC's Blind Pony Hatchery.

Anglers catch a large blue catfish on the Missouri River.



Missouri River was a blue catfish. It weighed 315 pounds and was taken just below Portland in 1866. The blue catfish is primarily a big river fish, occurring commonly in the Mississippi, Missouri, and Osage rivers, and occasionally in the lower reaches of their larger tributaries. There are also good populations of blue catfish in Lake of the Ozarks and Truman Reservoir. Smaller blue catfish eat a variety of food including aquatic insects, crayfish, and mussels. Once blue catfish get larger than about 18 inches, they eat mostly fish. Like flathead catfish, blue catfish can be caught using a variety of methods and baits. One exception is that blue catfish will readily take cut bait, where flathead catfish usually do not. Most catfish anglers will tell you that there is nothing like the feeling of fighting one of these huge fish!

Good Management and Angler Ethics Make Bigger Fish

Experiences like the one my friend and I had that warm spring day are occurring much more frequently because of MDC's continuing fisheries research and management. In addition, anglers are practicing catch-and-release more frequently because they, too, would like a better chance of catching a monster fish in the future. These big fish are very long-lived species, so the longer they are in the environment, the bigger they will get. If you're looking for a real fishing challenge, try hooking into one of Missouri's monster fish! ▲

Craig Gemming is fisheries regional supervisor for MDC's Central Region. For most of his 36-year career, he has worked on big river issues, including restoration of the state's endangered pallid sturgeon and lake sturgeon populations. He and his family enjoy all outdoor activities, especially fishing, deer hunting, and turkey hunting.

Get Outside

in AUGUST →

Ways to connect with nature



Gray dogwood

1

THE DOGWOOD DAYS OF SUMMER

Watch for bluebirds and robins gathered near gray dogwoods, eating the white berries.

2



Big brown bat

IT'S A BIRD, IT'S A PLANE, IT'S A BAT!

Look up in the night sky this month. Baby bats begin to take flight.

3



DISCOVER NATURE

Family Fishing Day

Saturday, Aug. 26 • 10 a.m.-2 p.m.
Twin Pines Conservation Education Center
RT 1, Box 1998, Winona, MO 65588
No registration required, call 573-325-1381 for more information

Join the Twin Pines staff at the annual Family Fishing Day. Enjoy grilled hot dogs and lemonade. Compete to see who can catch the most or the biggest fish. Let the kids try their hand at making a fish-print t-shirt or other craft. Try your luck at our free-prize drawing. Or just relax in the shade of one of Missouri's pines. For this event only, no Missouri fishing license is required.

4

THERE'S THE RUB

Male white-tailed deer rub velvet off their antlers. Look for rubs on small trees.



Natural Events to See This Month

Here's what's going on in the natural world.



Young striped skunks strike out on their own



Elderberries and wild grapes begin ripening



Blue-winged teal begin returning from the north



DISCOVER NATURE

Archery Basics

5

Saturday, Aug. 26 • 8:30-11:30 a.m.

Andy Dalton Shooting Range and Outdoor Education Center
4859 N. Farm Road 61, Ash Grove, MO 65604

Registration required, call 417-742-4361 by Aug. 24

Discover the basics of archery shooting. We will cover bow terminology, hand set, bow set, pre-draw, stance, and much more, and then go shoot on the static archery range. You may bring your own bow or use ours.

6

MUSSEL AMORE

Pocketbook mussels begin breeding this month. Look for these freshwater clams next time you are at the river or lake.



Plains pocketbook

7

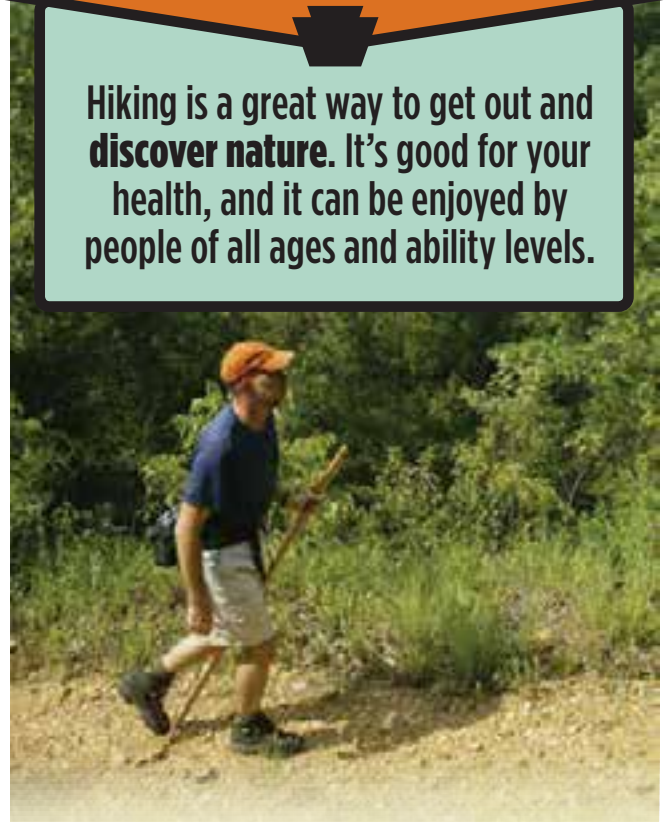
GRAB YOUR SHADES!

A total eclipse of the sun will occur in Missouri on Aug. 21. Don't be left in the dark for this once-in-a-lifetime event.



HIKED IT... LIKED IT!

Hiking is a great way to get out and **discover nature**. It's good for your health, and it can be enjoyed by people of all ages and ability levels.



HOW TO PREPARE:

- 👉 Wear comfortable shoes
- 👉 Plan to layer your clothing
- 👉 Pack water and a light snack

BRING:

- 👉 Camera and binoculars
- 👉 Guides to identify birds, tracks, and wildflowers
- 👉 Family and friends

For more information
and to find a trail near you,
visit mdc.mo.gov



Serving nature and you®

Places to Go

CENTRAL REGION

Rocky Fork Lakes Conservation Area

Scars from a history of coal mining become beauty marks

by Larry Archer

✧ Coal mining during the 1960s and early 1970s left this land scarred, but scars heal, and after time – and the right attention – they can become beauty marks. Rocky Fork Lakes Conservation Area (CA) bears such marks.

The pits have collected rain runoff and now make up the nearly 100 lakes and ponds that dot this 2,200-acre site roughly 6 miles north of Columbia.

“Most of it was coal mined – strip mined — and that’s why there’s so many fishing lakes out there now,” said Tim James, manager, Rocky Fork Lakes CA. “There’s about 700 acres that the coal company owned, but did not get mined, so it has those historic habitats on it: native grasslands and woodland complexes.”

Plentiful water, combined with stands of both woodland and grassland habitats, make Rocky Fork Lakes CA a birding destination. As many as 60 bird species have been identified on the site during the month of August in recent years.

It’s also a shooting destination. The site’s shooting range, which accommodates pistol, rifle, and shotgun shooting, was renovated in 2014 and sees steady traffic throughout the year. If you don’t mind the heat, August is a good time to beat the crowds, James said.



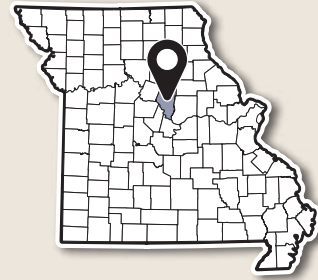
“There’s a waterfall on the site. It’s the outflow of Rocky Fork Lakes and drops about 15 feet or so. It’s a relic of the mining operation. It’s really cool, really attractive.”

—Rocky Fork Lakes
CA Manager Tim James

WHAT
TO
LOOK
FOR
WHEN
YOU
VISIT



Largemouth bass



ROCKY FORK LAKES CONSERVATION AREA

is in Boone County approximately
6 miles north of Columbia on Highway 63
and ½ mile east on Peabody Road.

N 39° 0425.71 | W 92°1857.44

short.mdc.mo.gov/Zie 573-815-7900

WHAT TO DO WHEN YOU VISIT



Bird Watching The diverse habitats attract a wide variety of migratory and resident bird species. Get the eBird Rocky Fork Lakes CA checklist at short.mdc.mo.gov/Zis.



Fishing Bass, catfish, crappie, and sunfish in more than 30 lakes and ponds. The largest, 52-acre Rocky Fork Lake, includes a concrete boat ramp and ADA-accessible fishing dock



Hiking No designated trails, but the area is accessible via field roads.



Hunting

Deer and Turkey Good, deer and turkey regulations are subject to annual changes, so refer to the *Spring Turkey* and *Fall Deer and Turkey* booklets for the current rules.

Dove Fair

Quail Fair

Rabbit Good

Squirrel Fair

Waterfowl Fair, diving ducks use Rocky Fork Lake during the migratory periods.



Firearms Range Shooting range includes 25-, 50-, and 100-yard distances. Clay target shooting area is also available, but is not ADA accessible. Ranges are closed from 9-10 a.m. Monday and Friday for maintenance.



Trapping and Field Trials Special-use permits are required; inquire with the area manager.



Eastern
cottontail rabbit



Blue grosbeak



Rough greensnake



American Badger

Taxidea taxus

Status

The American badger is listed as "vulnerable to extirpation" in Missouri because of its restricted range, relatively few occurrences, and widespread declines.

Size

26–35 inches (length)
13–30 pounds (weight)

Distribution

Sparse across
most of the state



Did You Know?

With their strong, sharp claws, badgers are excellent diggers and can disappear underground in less than a minute. They can move quickly, up to 15 miles per hour, and are capable swimmers.

Don't let the cute face and stocky body fool you. Underneath that fur lies a brawny, digging machine. Badgers can dig faster than their unwitting prey and faster than a human armed with the latest, high-tech gardening tool. Active mainly at night, badgers have keen vision, scent, and hearing. They are solitary animals that live in open prairies and farmland.



LIFE CYCLE

Badgers mate in late summer and give birth in early spring. The young stay with their mothers through the summer. Badgers have a home range of 1 to 2½ square miles where they dig a series of dens. They are most active at night. During winter, they become less active, occasionally leaving their burrows to hunt for food.



FOODS

Badgers eat rodents, such as ground squirrels and mice. They also eat rabbits, insects, lizards, snakes, and eggs of birds and turtles.



ECOSYSTEM CONNECTIONS

Badgers control rodent populations, and their digging activities aerate and mix the soil.

Outdoor Calendar

❖ MISSOURI DEPARTMENT OF CONSERVATION ❖

FISHING

Black Bass

Impounded waters and most streams north of the Missouri River:
Open all year

Most streams south of the Missouri River:
May 27, 2017–Feb. 28, 2018

Bullfrogs, Green Frogs

June 30 at sunset–Oct. 31, 2017

Nongame Fish Giggling

Impounded Waters, sunrise to sunset:
Feb. 1–Sept. 14, 2017

Streams and Impounded Waters,
sunrise to midnight:
Sept. 15, 2017–Jan. 31, 2018

Paddlefish

On the Mississippi River:
Sept. 15–Dec. 15, 2017

Trout Parks

Catch-and-Keep:
March 1–Oct. 31, 2017

Catch-and-Release:
Nov. 10, 2017–Feb. 12, 2018

Mentored Dove Hunts for First-Time Hunters

The National Wild Turkey Federation, with MDC, the Conservation Federation of Missouri, Quail Forever, the Missouri Prairie Foundation, and private landowners, is offering three mentored hunts on 10 different properties during dove season. To register, visit tinyurl.com/nuv6gos. Priority will be given to anyone 11 and older hunting for the first time. For more information, contact John Burk at 573-676-5994 or jb Burk@nwtf.net; or Elsa Gallagher at 660-277-3647 or EGallagher@quailforever.org.

For complete information about seasons, limits, methods, and restrictions, consult the *Wildlife Code of Missouri* at short.mdc.mo.gov/Zib. Current hunting, trapping, and fishing regulation booklets are available online at short.mdc.mo.gov/Zzf or from local permit vendors.



Free MO Hunting and MO Fishing Apps

MO Hunting makes it easy to buy permits, electronically notch them, and Telecheck your harvest. MO Fishing lets you buy permits, find great places to fish, and ID your catch. Get both in Android or iPhone platforms at short.mdc.mo.gov/Zi2.

HUNTING

Bullfrogs, Green Frogs

June 30 at sunset–Oct. 31, 2017

Coyote

Restrictions apply during April, spring turkey season, and firearms deer season.

Open all year

Crow

Nov. 1, 2017–March 3, 2018

Deer

Archery:
Sept. 15–Nov. 10, 2017
Nov. 22, 2017–Jan. 15, 2018

Firearms:

- ▶ Early youth portion (ages 6–15):
Oct. 28–29, 2017
- ▶ November portion:
Nov. 11–21, 2017
- ▶ Late Youth Portion (ages 6–15):
Nov. 24–26, 2017
- ▶ Antlerless Portion (open areas only):
Dec. 1–3, 2017
- ▶ Alternative Methods Portion:
Dec. 23, 2017–Jan. 2, 2018

Dove

Sept. 1–Nov. 29, 2017

Groundhog (woodchuck)

May 8–Dec. 15, 2017

Pheasant

Youth (ages 6–15):
Oct. 28–Oct. 29, 2017

Regular:

Nov. 1, 2017–Jan. 15, 2018

Quail

Youth (ages 6–15):
Oct. 28–Oct. 29, 2017

Regular:

Nov. 1, 2017–Jan. 15, 2018

Rabbit

Oct. 1, 2017–Feb. 15, 2018

Sora, Virginia Rails

Sept. 1–Nov. 9, 2017

Squirrel

May 27, 2017–Feb. 15, 2018

Teal

Sept. 9–24, 2017

Turkey

Archery:
Sept. 15–Nov. 10, 2017
Nov. 22, 2017–Jan. 15, 2018

Firearms:

- ▶ Fall: Oct. 1–31, 2017

Waterfowl

See the Waterfowl Hunting Digest or visit short.mdc.mo.gov/ZZx for more information.

Wilson's (Common) Snipe

Sept. 1–Dec. 16, 2017

Woodcock

Oct. 15–Nov. 28, 2017





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If you want to have a butterfly garden, start with native plants. This backyard garden is full of native flowers, and it attracts bees, butterflies, and other pollinators. In addition, native plants, such as these purple coneflowers, are used to the climate and flourish during the heat of a Missouri summer.

📷 by **Noppadol Paothong**